

- III. "On the Ciliated Groove (Siphonoglyphe) in the Stomodæum of the Alcyonarians." By SYDNEY J. HICKSON, B.A., B.Sc. Assistant to the Linacre Professor, Oxford. Communicated by Professor MOSELEY, F.R.S. Received May 23, 1883.

(Abstract.)

1. In Alcyonium there is a groove lined by remarkably long cilia, situated on the ventral side of the stomodæum. This groove, which has already been superficially referred to by O. and R. Hertwig, has important morphological relations in the group Alcyonaria which have not been previously referred to. I propose to call it the siphonoglyphe.

2. The cilia of the siphonoglyphe, as seen in a living Alcyonium, moving in unison, produce a current from without inwards which brings particles of food and fresh streams of water into the canal system of the colony. The cilia lining the rest of the stomodæum produce currents in an opposite direction, from within outwards.

3. A siphonoglyphe, varying in size and in the length of the cilia, is present in the same position in all the non-dimorphic Alcyonarians (without solid calcareous or horny axes) I have examined, *e.g.*, Cœlogorgia, Briareus, Nephthya, Spongodes, Tubipora, Clavularia, Heliopora, &c.

4. Amongst the dimorphic Alcyonarians the siphonoglyphe is usually absent in the autozooids, but well developed in the siphonozooids. In Sarcophyton, however, a feebly-developed siphonoglyphe is present in the autozooids in addition to the well-developed ones in the siphonozooids.

5. In Primnoa and Villogorgia, the only examples of Alcyonarians with solid axes I have examined, no siphonoglyphe can be found, and I am inclined to think, from the researches of other observers, and from general considerations, that it is not present in any genera in which the fleshy parts of the colony are represented only by a thin crust covering solid axes.

6. The paper contains some speculations to which I have been led, by these researches, concerning the probable phylogeny of the group, and a diagrammatic arrangement of the Alcyonaria on these lines.

7. Finally I propose to divide the Alcyonaria into five principal groups: 1st. The Proto-Alcyonaria, including only those genera which do not form colonies. 2nd. The Stolonifera, including the genera Clavularia, Cornularia, Tubipora, &c., in which the young colonies spring from a creeping stolon. 3rd. The Pennatulidæ, which remains as heretofore. 4th. The Gorgonidæ, a group which contains only those genera in which there are solid horny or calcareous axes,

and no siphonoglyphe. 5th. The Alcyonidæ, a large and somewhat heterogeneous group containing all the remaining genera of the Alcyonaria, which, though exhibiting many wide variations, *inter se*, agree in possessing no specially marked characters of deviation from an ideal central form from which, I suppose, they must have sprung.

IV. "On the Variations of Latency in certain Skeletal Muscles of some different Animals." By THEODORE CASH, M.D. and GERALD F. YEO, M.D. Communicated by Dr. SANDERSON, F.R.S. Received May 29, 1883.

In a former paper ("Proc. Roy. Soc.," vol. 33, p. 462) we laid before the Society the results of a series of experiments by which we had endeavoured to ascertain accurately the differences in the duration of the latent period of contraction of skeletal muscle (frog's gastrocnemius) which could be brought about by varying the following influences:—

1. The weight of load.
2. The mode of applying weight (supported or unsupported).
3. The strength of stimulation.
4. Temperature.
5. Fatigue.

We have since been engaged in determining the relative duration of the latent periods of different skeletal muscles of vertebrate animals. Besides several muscles of the *Rana temp.*, we have examined some from the toad, tortoise, small mammals, and birds. In this paper, which is intended to be a continuation of the one above referred to, we beg leave to lay before the Society the results of these experiments and our general conclusions.

We know from the works of Fick,* Marey,† Ranvier,‡ Frédéricq,§ Richet,|| and one of us,¶ that various muscles in the same animal have a mode of contraction differing more or less from one another, and adapted to the kind of work they have to perform. But in the works of most of these authors little information can be found concerning the variations in the duration of the latent period, in differently contracting muscles, whether those of the same animal or those of different animals.

* Fick, "Irritabelen Substanzen."

† Marey, "Du Mouvements dans les Fonctions de la Vie."

‡ Ranvier, "Leçons sur le Système Musculaire."

§ Frédéricq, "Bull. de l'Acad. roy. de Belgique," lvii, No. 6.

|| Richet, "Physiologie des Muscles," &c.

¶ Cash, "Journal of Anat. and Phys.," vol. xv.